	Ill. So. Am. Pl.	DC. Prodr.
9. Sarracha jaltomata, *Schl.* (Witheringia id.)...	ii. 16	xiii. 432
10. —— allogona, *Schl.* ..... „	ii. 16	xiii. 432
11. —— dentata, *R. & P.*..... „	ii. 16	xiii. 432
12. —— viscosa, *Schr.* ..... „	ii. 16	xiii. 433
13. —— ciliata, *nob.* ..... „	ii. 16	xiii. 683
14. —— propinqua, *nob.* ..... „	ii. 17	xiii. 683
15. —— diffusa, *nob.*..... „	ii. 17	xiii. 683
16. —— laxa, *nob.*..... „	ii. 18	xiii. 683
17. —— auriculata, *nob.* ..... „	ii. 18	xiii. 683
18. —— conspersa, *nob.* ..... „	ii. 19	xiii. 684
19. —— glabrata, *nob.* ..... „	ii. 19	xiii. 684
20. —— acutifolia, *nob.* ..... „	ii. 19	xiii. 684
21. —— vestita, *nob.*..... „	ii. 20	xiii. 684
22. —— glandulosa, *nob.* ..... „	ii. 20	xiii. 684
23. —— Miersii, *Dun.* (S. diffusa, *nob. bis*) ...	ii. 22	xiii. 684

	Ill. So. Am. Pl.	DC. Prodr.
1. Pœcilochroma punctatum, *nob.*	i. 153	xiii. 495
2. —— frondosum, *nob.*	i. 154	xiii. 495
3. —— guttatum, *nob.*	i. 155	xiii. 495
4. —— maculatum, *nob.*	i. 156	xiii. 495
5. —— Lobbianum, *nob.*	i. 157	xiii. 496
6. —— Lindenianum, *nob.*	i. 157	xiii. 496
7. —— Quitoënse, *nob.*	i. 157	xiii. 496
8. —— Boisseri, *Dun.*		xiii. 495
9. —— Funkiana, *Dun.*		xiii. 687
10. —— Sellowiana, *nob.* (Witheringia id., *Sendt.*)		iii. 403

	Ill. So. Am. Pl.			DC. Prodr.
1. Witheringia picta, *Mart.* ...	ii. 5	(Athenæa id., *Sendt.*)		xiii. 458
2. —— pogogena, *nob.*	ii. 5	„	„ ...	xiii. 459
3. —— micrantha, *nob.*	ii. 5	„	„ ...	xiii. 460
4. —— Schottiana, *nob.*	ii. 5	„	„ ...	xiii. 461
5. —— Pohliana, *nob.*	ii. 5	„	„ ...	xiii. 461
6. —— Martiana, *nob.*	ii. 6	„	„ ...	xiii. 462
7. —— hirsuta, *nob.*	ii. 6	„	„ ...	xiii. 463
8. —— anonacea, *nob.*	ii. 6	„	„ ...	xiii. 463

The seven new species of *Witheringia* from Chile enumerated by Remy (Walp. Ann. iii. 160) do not appear to belong to this genus: the four last seem related to *Solanum tuberiferum*, Dun. (olim *Witheringia montana*, Dun., *Solanum montanum*, R. & P.), but the floral characters there given are not sufficient to determine their true place.

XVIII.—*On the Discovery of Viviparous Fish in Louisiana**.

By B. Dowler, M.D.

In the month of October 1854, through the politeness of J. C. B. Harvey, M.D., of Tchoupitoulas Street, I received a small osseous fish, caught in the New Orleans Canal, which connects the city with Lake Pontchartrain. This fish had been placed in a basket containing crabs, one of which wounded it slightly in the abdomen near the cloaca, thereby exposing

* From Silliman's Journal for Jan. 1855.

several fœtal fish enveloped in a delicate membrane. The parent fish, which had been rudely thrust into a narrow-mouthed phial of spirits, retains, after immersion for two weeks, the original *rigor mortis*, and the same remark applies to the fœtuses, though they have been soaked in water: some of them have been forcibly straightened. On the 17th of October, in the presence of, and assisted by Drs. J. Hale and M. M. Dowler, I enlarged the wound and proceeded to dissect a somewhat globular mass of fœtuses bounded by the intestines before, and separated from them by an indescribably thin, diaphanous membrane; this mass was further bounded above by the spine and ribs, below and behind by the posterior inferior abdominal walls, bulging backward of the anal orifice and fin. The exterior envelope of this oblong globe consisted of a very thin, pellucid, extremely delicate and apparently laminated and flocculent membrane, like the amnion of the human embryo in the early state; it did not form a simple sac, but consisted of many duplications, like the arachnoidal reflections among the sinuosities and convolutions of the human brain, sending its prolongations as the hyaloid membrane does through the vitreous mass of the eye.

This uterine membrane (ovisac it cannot be termed) contained twenty-two fishes. It is probable that the inner surface of the uterine membrane sent forth a still more delicate membrane which enveloped each fish after the manner that the peritoneum envelopes the abdominal viscera; but the parent fish, and still more its enclosed organs, were too minute to admit of full demonstration during a necessarily hurried examination; moreover, the wish not to mutilate the parent fish very much, prevented a fuller dissection of the fœtal mass *in situ*.

Each fœtal fish was doubled laterally, sometimes to the right, sometimes to the left, into a globular form: the caudal fin, which is inclined to the lancet shape, though blunter, overlapped one eye and one side of the mouth: each fish *in situ*, and even after forcible extraction from its bed, was enfolded in a sac; some were drawn out united by pedicles to a common stem, somewhat like an umbilical cord.

These fœtal fishes presented a perfect example of close packing. A perceptible force was required to dislodge them from their beds. The concavity left by their extraction appeared to be lined with a smooth, black, peritoneal membrane.

The intestines, which were very minute, were crowded forward by the rounded mass of fœtuses which occupied the greater portion of the abdominal cavity. No ova were discovered.

Without attempting fully to describe even the dermal skeleton, I may observe, that this tiny fish is a most symmetrical one. Its minuteness may be imagined when I state, that after the

removal of the enclosed fœtuses it weighed only seven grains, though not disemboweled. Thorough desiccation would probably reduce its weight one-half or more. The fish exposed for two hours in the shade on a damp day, was but slightly desiccated. It was weighed by Mr. Macpherson, apothecary, in my presence; but fearing a mistake, I had it weighed a second time, with the same result. If each fœtus weighed but one grain, the aggregate would be more than three times that of the mother.

Measurements in inches:—Length, including the caudal fin, 2 inches; greatest circumference, $1\frac{3}{4}$; width vertically, $\frac{1}{2}$; length of thoracic fin, $\frac{1}{4}$: the caudal fin does not expand from its base or proximal end, but terminates ovally; its length, $\frac{1}{2}$; the anal, but little expanded, $\frac{1}{4}$; the ventral is too minute for convenient measurement, being almost invisible without a lens; the dorsal, which is single, has but a slight vertical width, arising from a base $\frac{1}{4}$ of an inch, nearly opposite, though a little forward of the anal.

The teeth are advanced, nearly ranging with the lips, being very numerous, close and small, though scarcely discernible without a magnifying glass. Lips thin, the under one slightly projecting; angles of the mouth not depressed. Eyes medium size. Head flattened at the frontal bone. Operculum much expanded. The branchiæ largely developed in three great arches, densely fringed with thick tufts, the outer and inner rows inclining to the central, having also one, perhaps more rows behind, which are shorter.

The predominant hue of this fish is a tawny or fawn colour; the opercula silvery; head metallic gray; muzzle blackish, slightly projecting.

There are six rows of rather quadrangular black spots, more particularly marked in the posterior half of the body, averaging twenty-five spots for each row. These black spots, resting on a tawny ground, leaving intervals something larger than themselves, give a picturesque appearance, forming stripes of alternating hues, the three upper of which slightly curve corresponding to the arching back; but each succeeding one becomes straighter, the fourth and fifth being nearly straight; the sixth, or lower row, follows the abdominal curve, and disappears at the anal fin; the other five rows gradually converge without coalescing at the origin of the caudal fin. At the origin of this fin the spots are displaced out of line. By this arrangement the six rows of alternating black and tawny leave in the longitudinal direction six other continuous tawny stripes, all of which except the two interrupted ones, lost at the anal fin, converge without mingling in the tail, all being about equal in length. The colours fade

somewhat into a grayish-yellow round the thoracic fins, which are nearly central between the dorsum and abdomen, being on a level with the eyes, and about one line from the opercula.

There are six or seven rows of scales. The spinous rays of the fins are, about twenty-five caudal, twelve anal, fifteen dorsal, ten thoracic.

The fœtuses are half an inch long, all alike, exactly resembling the maternal form and proportion, with the following slight exceptions: namely, their bodies are more slender and compressed laterally; their heads are comparatively larger, and their eyes more prominent; their colours are less variegated, and paler. A still greater difference appears about the middle of the abdomen, where there is attached to each fœtus a whitish, faintly yellowish, placenta-like irregularly formed mass of considerable size, having a broad base, being apparently implanted in or blended with the abdominal integument, possessing considerable strength, and constituting what may be termed the umbilical prominence; perhaps it may turn out upon further examination that this mass may not be placental, but an adherent mesenteric mass of convoluted membrane.

These fœtal fishes were probably sufficiently developed at the time of the parent's death to live independent of the mother.

The remarks of Dr. Dowler upon a viviparous fish of Louisiana, contained in the above notice, add a few points to the unpublished facts connected with the history of that family. The fish itself is not new; it has already been described and figured in 1821 by Lesueur, in the 2nd volume of the Journal of the Academy of Natural Sciences in Philadelphia, under the name of *Pœcilia multilineata*. It belongs to my family of *Cyprinodonts**. I have had ample opportunity of observing large numbers of this fish during my stay in the South, in the spring of 1853, in Mobile and in New Orleans, where it is found everywhere in the lagoons in the immediate vicinity of these two cities, and not only of ascertaining that they are viviparous, but also of tracing the whole development of the embryo from the first stages of the segmentation of the yolk to the hatching of the young, which were freed from the abdominal pouch of the mother in the month of April. The date of the observations of Dr. Dowler seems to show that they breed twice a-year. I should have hastened to publish my investigations, had not Duvernoy already published a very full account of the later period of the embryonic growth of another species of this genus,

* See Agassiz's Recherches sur les Poissons fossiles, vol. v. pt. 2. p. 47.

the *Pœcilia surinamensis*, Val., in the 'Annales des Sciences Naturelles,' 3rd series, vol. i. p. 313. plate 17, to which my own observations, except with reference to the earlier changes of the embryo, will add comparatively little, when published. That the fish observed by Dr. Dowler is the same as that I had an opportunity of investigating, his description shows very plainly. There is only one fact to which I would again call attention, though I have already noticed it before, that the genus *Mollienesia* of Lesueur is founded upon the male of the same species he has described as *Pœcilia multilineata*. There cannot be the slightest doubt about it, for I have repeatedly seen them copulate; and among a large number of specimens examined, all those that answer to the description of *Mollienesia latipinna* are males, and all those corresponding to the description of *Pœcilia multilineata* are females. There are several species of this family much smaller than this *Pœcilia multilineata*; indeed, it contains the smallest representatives of the great type of Vertebrates. My *Heterandria formosa*, for instance, when full-grown, is not quite an inch long, and does not weigh more than five grains. An adult male weighed 33½ milligrammes.

L. Agassiz.

Cambridge, U. S. Aug. 22, 1854.

XIX.—*On the anomalous Oyster-Shell described in the 'Annals' for February.* By Dr. J. E. Gray.

To the Editors of the Annals of Natural History.

Gentlemen,

I have received an explanation of the anomalous Oyster-shell described by me in your last Number, from my friend Dr. Gray, and as it appears to me wholly satisfactory, I forward his note, for the benefit of those of your readers who, like myself, may not have been aware that similar monstrosities, as I am informed by him, are by no means of unfrequent occurrence.

Your obedient servant,

George Busk.

"My dear Busk,

"I have little doubt the shell you described in the last Number of the 'Annals' is that of an Oyster (*Ostrea edulis*), growing on the *inside* of a valve of *Pholas candida*. The inside of the shell of that species has markings corresponding to the tubercles and lines on the outer surface, and in the specimen figured these markings are impressed on the outer surface of the Oyster-shell. It further appears, that the shell of the *Pholas* must have been that of a dead specimen, since it had growing upon it a *Mem-*